UM Smart Sustainable Campus 2020 -2030

Disaster Recovery
Hybrid Cloud
Vehicle Tracking & Management
Internet Of Things
Environment Sustainability
Intelligent Network
HPC
Bus Tracking
Smart Street Light
Water
University Enterprise Systems
Intelligent Surveillance
Open Data
Network Environment & Security Control
Electric Vehicle Charging
Waste
Smart Education
Smart Building
HR Up Skilling
Governance,Risk & Financial Management

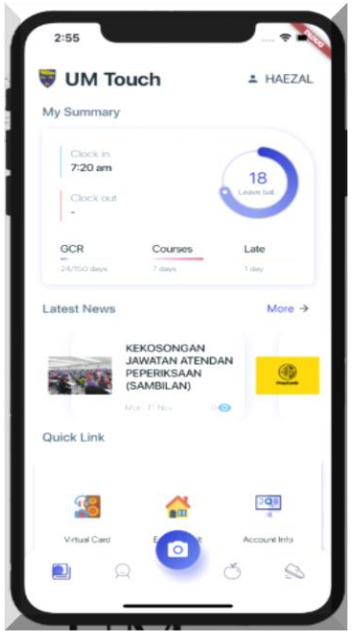
ITU-T : International Standards for Smart Sustainable Cities
(International Telecommunication Union (ITU-T)- United Nation)

UM Smart Sustainable Campus Philosophy:

- Mobile based
- Open & Secured Campus
- Open data & Central Repository
- Central facility for High Performance Computing (HPC)
- Towards a fully Intelligent Network in 10 years
- ICT Security to achieve level 4 (NiST) in 3 years time & level 5 (NiST) in 5 years
- All University Enterprise System (FIS,HRIS ,SIS) – 70% Outsource
- Enhancement, Synchronisation & Simplification of existing Internally developed Application Systems-
- Support smart learning environment
- Implementation of sensors to track usage & reduce wastage
- Environment Sustainability Monitoring & Compliance (OSHE & UMCARES)
- Support Academic R&D to promote sustainability
- Support the development of "home grown" technology & test bed via collaboration with potential partners internal / external

UM Smart Sustainable Campus 2020 -2030 – projects categories

ICT Infrastructures	• Intelligent Network • Advanced Network Environment & ICT Security Control , Integrated Identity Management (CAS,LDAP,AD) • Machine Learning & AI for Predictive detection • HYBRID Cloud , • Disaster Recovery (DR for all UM Critical Services) • Central Facility for Advanced 8k Multimedia Studio
Safety & Security	• Campus Intelligent Surveillance
Mobility & Logistic	• Vehicle Tracking, Bus Tracking , Transport Management
Environmental Sustainability	• Safety, Health & Environmental Monitoring & Compliance (OSHE & UMCARES)
University Enterprise System (UES)	• Enhancement, Simplifications of all existing systems including University Enterprise Systems (HR, Finance, Academic) • Additional New Modules to cater for Analytic & Value Chain
High Performance Computing	• Central Facility for High Performance Computing (HPC), Research Data Repository
Smart Education	• eLearning , Open Distance Learning , Smart Library, Smart Classroom
Campus Services	• Simplified access to online services : Student, HR , Helpdesk, OSHE, QR Code, Virtual Smart Card, Virtual Access card, Locator etc
Smart Utilities Management	• Electric & Water usage & wastage ; Smart LED, Smart Street light ; Central management of sensors.
Smart Building	• Energy Efficient, Natural lighting, Automation, Energy saving, Smart metering, rain harvesting etc



UM Smart Sustainable Campus 2020 -2030 - Overarching Goals

UNIVERSITI MALAYA

Environment & Sustainability

Campus Level Services

Quality of Life / LifeStyle
- Mobility
- Safety
- Conducive
- responsive

Environment & Sustainability

Policy & Mgmt:
- Integrated environment management
- Strategy & Administration
- Effective Intervention/ Conservations

Infrastructure :
- Masterplan for Physical Infra
- Mobility ,Transport & Traffic
- Public Safety

Energy & Climate Change
- Energy Performance & Conservations
- C02 from energy & per capita

Pollution & Waste
- Waste management
- Air Quality
- Water Management
- Noise

Socio economy
- Financial Resilience
- Disease Control , mitigation & Health
- Campus Facilities

Campus Level Services

Technology & Infra:
- Buildings &
- Transportation- transport management
- Emergency Response
- Safety & Security
- Central Facility for High Performance Computing, Central Repository for Research Data, Smart Learning)

Economy & Financial
- Financial Management (Cost Saving)
- Human Capital
- Institutional Effectiveness
- Productivity & resource management (Optimisation)
- Value Chain & Innovation

Governance
- Organization, Leadership & commitment
- Establishment of Regulations, Procedures & Risk Management

Sustainability
- Environmental & Natural Hazards
- Energy consumption & intensity
- Water consumption & leakage
- Air Quality
- Waste management
- Policy : recycling, reduction

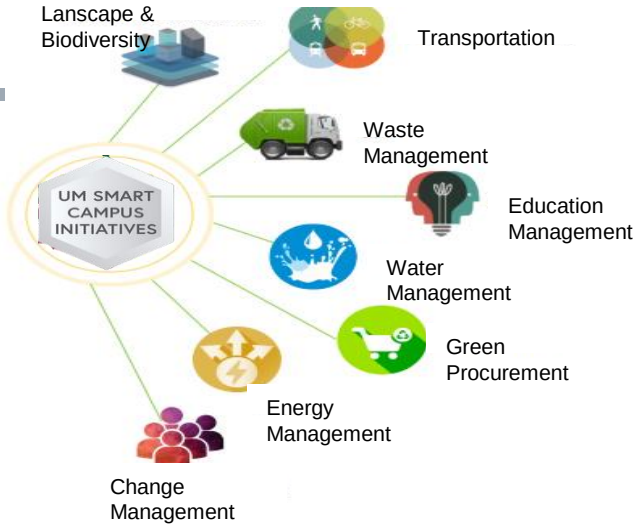
Quality of Life

Multi dimensional nature of Quality of Life include basic needs:

- Safety
- Health
- Conducive environment for continuing education , do research and innovate
- Ease of Access to available University Facilities & Services

UM Smart Sustainable Campus Standards

UM Smart Campus Initiatives strategically aims to support UM ECO Campus Blueprint towards the establishment of a **Smart Sustainable Campus**



ITU-T : International Standards for Smart Sustainable Cities

(International Telecommunication Union (ITU-T)- United Nation)

1) Information & communications technologies.
2) Environmental sustainability.
3) Productivity.
4) Equity and social inclusion.
5) Quality of life.
6) Physical infrastructure.

https://www.itu.int/en/publications/Documents/tsb/2016-Shaping-smarter-and-more-sustainable-cities/index.html#p=20

- 2018 Implementing ITU-T International Standards to Shape Smart Sustainable Cities: The Case of Moscow
- 2017 Implementing ITU-T International Standards to Shape Smart Sustainable Cities: The Case of Dubai
- 2017 Implementing ITU-T International Standards to Shape Smart Sustainable Cities: The Case of Singapore

Smart Sustainable Cities/ Campus will contribute to the achievement of the Sustainable Development Goals by leveraging information and communication technologies (ICTs) to set cities on a development course characterized key performance indicators for Smart Sustainable by environmental sustainability, resilience, service levels and quality of life